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ABSTRACT

Four experimental Super 8 mm sound motion picture films were designed and produced for presentation in a 2x2x2 factorial research model to test the effects of mode of response and stimulus conditions in films for preschool children. Subjects were 40 children (22 males and 18 females) in a Headstart Program in San Pedro, California, divided so that there were ten in each treatment condition and five in each age group. Findings revealed a significant different (p.05) in favor of those groups receiving treatments in which an overt response was required. It was also found that the developmental age effected the cueing variable in diverse ways at upper and lower levels of preoperation. The results are discussed in terms of Piaget's construct of the preoperational learner.
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EFFECTS OF CUEING AND OVERT RESPONDING IN FILMS DESIGNED
FOR PRESCHOOL CHILDREN

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THE PROBLEM

The problem was to match the design of direct learning films to the needs of the preschool children defined as the target audience, and to the demands of the task required by the film content.

The needs of the learner were analyzed through the theory of Jean Piaget (1950, 1962).

The task was isolated from the taxonomy of learning conditions (Gagne', 1965) normally found in nursery school education.

Needs of the Learner

Two components of learner characteristics were isolated from analysis of the preoperative stage in Piaget's theory. These components were : (1) the motor output of the child which is developed from external motoric imitations to the stimulus in the real world, and (2) the coordinating abstraction which is developed from a combining of stimuli in the present field in relation to a former set of assimilations (Flavell, 1963, p 155).

The Effect of Cueing and Responding in Films
Designed for Preschool Children

by Marcia F. Cohen, Ed. D.

ABSTRACT

Four experimental Super 8 mm sound motion picture films were designed and produced for presentation in a 2x2x2 factorial research model to test the effects of mode of response and stimulus conditions in films for preschool children.

Subjects were 40 children in a Headstart Program in San Pedro, California, divided so that there were 10 in each treatment condition and 5 in each age group.

Findings revealed a significant difference ($p < .05$) in favor of those groups receiving treatments in which an overt response was required. It was found that the developmental age effected the cueing variable in diverse ways at upper and lower levels of preoperation.

The results are discussed in terms of Piaget's construct of the preoperational learner.

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The Task

The task chosen for this study was that of a verbal paired association. Gagne' (1965) made an analysis of the conditions of learning under which a person makes a paired verbal association. One of these conditions is a connection which enables the individual to learn through the use of an intervening link, having the function of mediating or coding. Among the various types of mediating links is the picture. Another condition is an overt (or audible) response.

Hypotheses

From the interplay of task requirements and learner capabilities, it was hypothesized that a required overt response would enhance learning. It was also hypothesized that a group of stimuli, functioning as cues, would also enhance learning. No difference in age group performances was postulated. The hypotheses generated from this conceptualization were :

- I. Groups of preschool children presented a film requiring an overt response will score higher on criterion measures of paired associative learning than groups presented a film requiring a covert response.
- II. Groups of preschool children presented a film treatment incorporating picture cues will score higher on criterion measures of paired associative learning than groups having no cues.

III. The interaction effect between cueing and overt responding will cause those groups having an overt plus cueing treatment to score higher on criterion measures.

IV. The interaction favoring film treatment in the overt responding plus cueing presentation will hold at upper and lower levels of preschool age.

METHOD

A 2X2X2 factorial design with age, response mode, and stimulus presentation was employed in a posttest only experimental framework with nonattentive behavior as the covariate. Four treatments were administered to four groups of children at two age levels. There were 10 children in each treatment group. Each treatment group was composed of children ranging in age from 37 to 61 months. Because of the wide range, the children were further subdivided statistically according to age. The cutoff point was 51 months, or four years, four months.

Independent manipulative variables.

There were four independent variables: (1) sex, (2) mode of response, (3) stimulus arrangement, and (4) developmental age.

Mode of response and stimulus arrangement were arranged within each of the four films in four distinct treatment conditions:

OR/NC : Overt Responding/ No Cue

OR/C : Overt Responding / Cue

CR/NC: Covert Responding/ No Cue

CR/ C: Covert Responding/ Cue

Covariate

The covariate was the nonattentive behavior of the children. Nonattentive behavior was defined as looking away from the film, talking out, and jumping up or leaving the seat. An examiner was assigned to each child during the film showing and recorded each nonattentive movement as the film ran. The films were controlled for time.

Dependent Variable

The dependent variable was learning, measured as the number correct out of twenty responses. The response tasks were designed as follows :

(1) Given a grapheme (letter) from E , the S would respond with an appropriate phoneme. This was considered a verbal response and was considered task specific because it was taught in the film.

(2) Given a phoneme (sound) by E, the S would select a corresponding grapheme from a stimulus array. This was considered a recognition response and was labelled a transfer task because it was not taught in the film.

Controls

Control was established in the following ways:

(1) A pretest was given to all children for entering behavior on the four letters used in the films. Any child knowing even one letter was eliminated from the study. In this manner a baseline of zero was established.

(2) Nonattentive behavior was controlled through the use

of an individual examiner. All examiners were put through a five day training program and tested for consistency at the end of that time.

(3) Filmic ingredients were controlled by using the same pictures as cues in all cue treatments, by using the same actress, and by controlling for consistent production techniques.

(4) *Treatments were randomized to intact groups.*
Sample

The experimental population consisted of ^{forty} children in the San Pedro Headstart program distributed along eight ethnic categories: 10 Caucasian, 5 Negro, 4 Samoan, 17 Mexican-American, one Filipino, one Negro-Caucasian, ^{and} one Caucasian-Mexican. Eight Mexican-Caucasian children were eliminated from the present study because they spoke only Spanish. (Data was gathered from these children, however, to use in a later study). Two children were also eliminated because they knew one letter name on the pretest.

The final sample, therefore, consisted of 40 children, ten in each treatment group, subdivided according to age. There were 22 boys and 18 girls.

Description of the Films

The films were approximately one minute in length for each letter taught. Four letters were used: M, P, H, and D. These were represented in upper and lower case. Four cues were used to supplement each letter in the cue treatment. The cues were presented one at a time in a frame with the letter that it paired. After the single presentation there was a group presentation of all four cues with the letter in the center as a summation.

For example, the letter Hh was cued by a picture of a hand along with the Hh . This was withdrawn and a hat appeared with the Hh symbols. The hat was withdrawn and a house appeared. A summing frame then appeared with all pictures and the letters.

In the overt response form, the actress said, "Say it with me," and repeated the sound and the name of the object.

No request was made to respond in the covert form, but a three second time span was allowed after each presentation in case the child thought of the covert response himself. This provided a time control.

RESULTS

Statistical Analysis

The data were analyzed through the use of the General Linear Hypothesis BMD0 5V Program (Dixon, 1967) on the IBM computer 360. All computation was done at the Computer Service Center, University of Southern California. The program accommodates both equal and unequal cells through a change in program cards.

Null Hypotheses Results

Results were reported in terms of the null hypotheses. Hypothesis ^{one}1 was significant at the .05 level of confidence.

Insert Table 1 about here

There were no significant differences for hypotheses two, three and four.

Insert Table 2 and Table 3 here

The data were analyzed for influence of sex through the use of the variable card for unequal cells. There was a significant difference in Treatment II at the .01 level.

Insert Table 4 here

DISCUSSION

Response Mode

The results of the study revealed a significant difference at the .01 level in favor of those groups receiving the overt response mode. This was true at upper (52-61 months) and lower (37 to 51 months) age levels.

This finding suggests that a paired associative learning task presented through film is best acquired by preschool children through an overt response. This evidence can be corroborated with research in non-film tasks (Flavell, Beach and Chinsky, 1966 ; Keeney, Cannizzo, and Flavell, 1967; Kingsley and Hagen, 1969; and Hagen and Kingsley, 1968).

Stimulus Mode

There was no significant difference in the effect of the cues upon learning from the films.

The finding revealed that the use of pictures was not consistent within the wide range of ages within the pre-operative age level.

It seemed, therefore, to be incumbent upon the author to further analyze the data for a possible cause of this finding. Was it that children at upper and lower levels of the preoperative age span behaved differently under different conditions ?

Developmental Influence

The absence of an interaction effect and the spread of the covariate means (Table 2) warranted an analysis of the data without the covariate. The purpose of this analysis was to remove the statistical control upon behavior to view the data as it appeared in its raw form.

The results of the analysis of variance (Table 3) revealed a clear developmental influence, significant at the .01 level of confidence in favor of the older children to learn from the film.

This suggested that the cueing was a distractor to the younger children, whereas it was not a distractor to the older children. In fact, the cue plus response mode of learning had the highest mean score of all for the older children.

A diagrammatic analysis of the means of the four groups (Figure 1) illustrates the disparity of scores when there was a cue present under each of the response conditions and at each age group.

One possible explanation for the difference in reactions to cues at upper and lower levels of preoperative ages is the concept of centering, or paying attention to a single striking feature of the object (Flavell, 1963, p 157). Because of this phenomenon the younger preschool child tends to pay attention to a particular point of the stimulus. Where there are four cues plus a response, the younger child cannot hold the prime stimulus in mind against distraction, even when the cues are presented one at a time as in this study. It may be that he doesn't know what the prime stimulus is. It may be that he is too young to attend under so much information input.

The older child, however, has the ability to classify as he is entering the next stage of cognitive growth and, therefore, he is able to utilize the coordinated abstraction more effectively.

Conclusions

The findings in the study revealed that in preparing films for preschool children when a paired association is to be learned the following conclusions are supported :

1. An overt response increases learning by the preoperative child and should be planned into the design of the films for children at all preschool ages.
2. Up to four ~~presented~~ ^{sequentially} presented visual-verbal cues added to an overt response may be expected to increase learning for children over the age of four years, four months.
3. Four sequentially presented visual-verbal cues may be predicted to inhibit learning in an overt mode for children under four years, four months.

TABLE ¹/₆

ANALYSIS OF COVARIANCE FOR EXPERIMENTAL GROUPS

Source	df	MS	F
Cue/No Cue (A)	1/31	232.789	1.346
Overt/Covert (B)	1/31	262.300	5.446 ^a
Age (C)	1/31	232.667	1.329
A x B	1/31	224.785	0.233
A x C	1/31	223.109	0.001
B x C	1/31	223.148	0.006
A x B x C	1/31	243.816	2.878

^ap < .05.

TABLE 2

MEANS AND STANDARD DEVIATIONS FOR EXPERIMENTAL
GROUPS AND MEANS FOR COVARIATES

Treatment Groups	N	Treatment $\bar{X}$	σ	Covariate $\bar{X}$
Older <u>Ss</u>				
OR/NC	5	11.600	2.408	8.800
OR/C	5	13.000	3.535	16.799
CR/NC	5	11.400	3.911	8.800
CR/C	5	10.600	3.911	8.800
Younger <u>Ss</u>				
OR/NC	5	10.200	1.923	17.799
OR/C	5	9.000	3.391	23.799
CR/NC	5	7.800	3.492	14.800
CR/C	5	8.000	3.391	24.399

3
TABLE: ~~8~~

ANALYSIS OF VARIANCE FOR EXPERIMENTAL GROUPS

Source	<u>df</u>	MS	<u>F</u>
Cue/No Cue (A)	1/32	351.312	.008
Overt/Covert (B)	1/32	373.714	2.050
Age (C)	1/32	435.312	7.662 ^a
A x B	1/32	351.613	0.032
A x C	1/32	352.812	0.145
B x C	1/32	351.613	0.036
A x B x C	1/32	359.312	0.737

^a_p < .01.

TABLE 4
ANALYSIS OF COVARIANCE FOR INFLUENCE OF SEX UPON TREATMENT GROUPS

Source	df	MS	F
NC/R	1	14.11	0.133 5
NC/ NR	1	450.60	45.929 a
C/R	1	430.74	2.488
C/NR	1	0.017	0.019

a p < .01

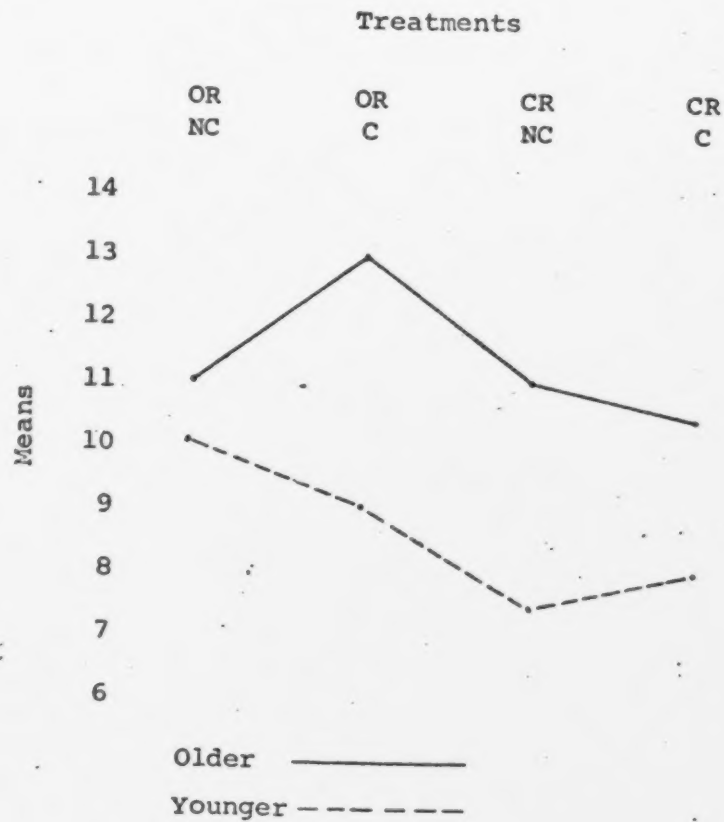


Fig. ¹/₅.--Means for younger and older children in experimental groups.

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